

Cambridge University Press  
978-0-521-68216-9 - The Neurology of Olfaction  
Christopher H. Hawkes and Richard L. Doty  
Frontmatter  
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## Foreword

As a 20-year-old I stepped outdoors and in an instant was taken back in time to my grandmother's garden, the aroma of baking bread from her kitchen reawakening in me visual memories, feelings, and experiences of clarity and intense familiarity. I looked about me and saw a bakery nearby.

At the age of 45 my mother lost her sense of smell, and at the age of 65 she developed Parkinson's disease.

When I was a medical student as part of a course in public health our class visited a building on Manhattan's lower east side where coffee was roasted commercially. On entering the building the fragrance of roasting coffee was deliriously wonderful. A workman by the door said: "After 20 minutes you won't be able to stand the smell." He was right.

When playing soccer in school I suffered a hard knock on the head colliding with an opposing player and in that instant smelled an odor as peculiar as it was intense.

The olfactory system is, paradoxically, primitive yet complex and sophisticated, not following many of the rules pertaining to other sensory systems, intimately and immediately connected to deep and important brain structures. It declines with age, and its loss may foretell serious and progressive degenerative disease of the brain. Despite the obvious importance of this vital sensory system, olfaction has largely been neglected by neurologists.

Where have the neurologists been all this time and why have they neglected this important modality? The nose is the "eye" for most nonprimates and just because other sensory modalities have proven critical in human evolution does not make the sense of smell unimportant to human beings. Indeed, this sense plays a critical role in safety and nutrition, and recent studies suggest its understanding may help to unravel the mysteries of certain neurologic diseases.

The *Neurology of Olfaction* connects olfactory science to human neurology for the first time. Jointly authored by Professor Christopher Hawkes, a leading clinical neurologist with a special interest in olfaction, and Professor Richard L. Doty, a world-renowned specialist in smell and taste, this monograph provides an engaging overview of the sense of smell and its importance in human neurological disease. The book is replete with compelling experimental

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findings and fascinating clinical case studies, and each time I picked it up I found myself spending much more time with it than I had planned. It will serve as a valuable reference source for neurologists and others truly interested in the newly developing world of the chemical senses. Every neurologist should have this book in their library.

**Thomas R. Swift, MD FAAN**  
Professor Emeritus and Former Chair  
Department of Neurology  
Medical College of Georgia  
President  
American Academy of Neurology, 2005–2007  
Past President  
American Association of Electromyography and Electrodiagnosis  
Past President  
Society of Clinical Neurologists



## Preface

Olfaction evolved at least 550 million years ago and, in conjunction with the ability to move, eat, and reproduce, detecting chemicals by specialized receptors was about all that invertebrates could do. Today the sense of smell is commonly viewed as a somewhat more primitive modality than its sister sense of taste, in that it does not rely upon the thalamus for cortical transmission. Vision and hearing are even more recent phylogenetically, employing the thalamus in their projections to cortical regions. They have received major attention because of their perceived biological importance in humans. However, the significance of the olfactory system for everyday life is rarely appreciated until dysfunction occurs, and this primary sensory modality is far from immune to disease – in fact it is *more* vulnerable than any other sensory system. This is largely because of its virtually unprotected contact with the external environment in the nose and its close neural connections with temporal lobe and limbic brain regions associated with memory and emotion. As we describe, this anatomy provides access for neurotropic agents and facilitates their spread to regions associated with developmental and degenerative diseases. Clearly, the studious avoidance and trivialization of smell testing by clinicians is unwarranted, but until recently the excuse was always that the sense of smell is not important, and that it provides information of minimal diagnostic value. All this is in the process of change as we try to show here. For example, many studies demonstrate the consistency and probable premotor development of decreased smell function in degenerative disorders, notably Parkinson's and Alzheimer's diseases. This is clearly important: if a simple smell test can assist with a diagnosis, it might replace more complex procedures and, more importantly, it may help to identify those family members at risk of future illness.

This book provides a resumé of the anatomy and physiology of the olfactory pathways and how the sense of smell may be measured. We elaborate those diseases where smell loss is a notable feature that may assist the clinician in making a diagnosis. Approaches are detailed for diagnosing, investigating, and treating a number of olfactory disorders and for counseling patients how to cope best with impairment of olfactory function. Finally, we

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describe strategies that help to minimize food poisoning and avoid dangerous situations, such as leaking natural gas.

We hope this book will stimulate others to take up a clinical and research interest in olfaction and give this ancient modality the full attention it richly deserves.

CHH

RLD



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